

REMARKS

Each of Claims 2-10 has been amended to insert the article "the" where appropriate in accordance with the Examiner's requirement.

Claim 5 has been amended to change the term "acidity" to "acid" in accordance with the Examiner's suggestion.

Claim 7 has been amended in paragraph b) to remove the word "if" and place it in better form.

A new Abstract page in which the text has been amended to replace the term "comprising" with the word "containing" is enclosed.

The Abstract was objected to because it included legal phraseology.

The Abstract has been corrected in accordance with the Examiner's requirement.

It is believed that the amendments to the Abstract made herein remove the basis for this objection.

Withdrawal of this objection is therefore requested.

Claims 1-10 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Six specific bases for this rejection were given. It is believed that the amendments made herein removes four of these bases. Applicants respectfully traverse the other bases.

The first basis for this rejection is that the claimed "chlorinated aromatic hydrocarbons" and "hydrolyzable chlorine" in Claims 5 and 10 lack antecedent basis because they were not initially recited in the base Claims 1 and 6, respectively. Applicants respectfully traverse this rejection.

Applicants' Claims 5 and 10 are directed to a more specific composition of stream P4. Each of Claims 1 and 6 does provide antecedent basis for stream P4. Claims 5 and 10 further modify their respective base claims by reciting additional types of materials which may be present in stream P4.

Applicants' use of the terms "chlorinated aromatic hydrocarbons" and "hydrolyzable chlorine" does not therefore render Applicants' Claims 5 and 10 indefinite.

Another basis for this rejection is that the terms "the solvent" and "the reaction residue" used in Claim 6 lacks proper antecedent basis.

Applicants have amended Claim 6 to remove "the" from each of the quoted terms. It is believed that this amendment removes the basis for this rejection.

The third basis for this rejection is that the term "if" in Claim 6, line 4 is an indefinite term.

Claim 6 has been amended to delete the word "if". It is believed that this amendment removes this basis for the rejection.

The fourth basis for this rejection is that the expression "40 ppm by weight of acidity" in each of Claims 5 and 10 was not understood.

Each of Claims 5 and 10 has been amended to change "acidity" to "acid" in accordance with the Examiner's suggestion.

It is believed that this amendment removes this basis for the rejection.

The fifth basis for this rejection is that it is unclear whether the "a high boiler" in, e.g., Claim 4, is the same or different from the initially recited "a high boiler" in Claim 1.

Applicants have amended Claim 4 and Claims 2, 3, and 5-10 to insert the article "the" where appropriate in accordance with the Examiner's requirement. It is believed that these amendments remove this basis for rejection.

The sixth basis for this rejection is that it is not seen what happens to the phosgene in the feed as it is not mentioned as being in the product.

Applicants would note that phosgene has a boiling point of only 8.2°C. One skilled in the art would therefore readily appreciate that any phosgene would therefore be present in the vapor phase low-boiler and solvent-enriched gas stream, P1.

Applicants therefore maintain that their claims as amended herein do satisfy the definiteness requirement of 35 U.S.C. §112, second paragraph.

Withdrawal of this rejection is therefore requested.

Claims 1-10 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-5 of U.S. Patent 6,803,483.

It is believed that the enclosed terminal disclaimer removes the basis for this rejection.

Withdrawal of this rejection is therefore requested.

Claims 1-10 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 2-10 of co-pending Application No. 10/457,307.

It is believed that the enclosed terminal disclaimer removes the basis for this rejection. Withdrawal of this rejection is therefore requested.

Claims 1-10 further stand rejected under the judicially created doctrine of double patenting over Claims 1-5 of U.S. Patent 6,803,483.

It is believed that the enclosed terminal disclaimer removes the basis for this rejection.

Withdrawal of this rejection is therefore requested.

Claims 1-10 further stand provisionally rejected under the judicially created doctrine of double patenting over Claims 2-10 of co-pending Application No. 10/457,307.

It is believed that the enclosed terminal disclaimer removes the basis for this rejection.

Withdrawal of this rejection is therefore requested.

Claims 1-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over admitted prior art or U.S. Patent 4,076,577 (Hetzell et al) in view of WO 011/8570508) or U.S. Patent 2,471,134 (Wright). Applicants respectfully traverse this rejection.

Applicants would note that there is no WO 011/8570508. In view of the fact that this reference does not appear on the Form 892 which accompanied this Office Action, Applicants have assumed that the reference upon which the Examiner intended to rely was WO 01/85708, the only WO patent of record which is believed to correspond to U.S. Patent 6,846,389, issued in the name of Kaibel et al. If this assumption is incorrect, Applicants respectfully request that the Examiner identify the reference upon which she did intend to rely.

As noted in the Office Action, Applicants have "admitted" that it is known in the art to separate crude TDI distillation feed product using first, a pre-evaporator which generates (i) a liquid bottom product that is treated in a second, separate process to remove volatile products from the reaction residue and (ii) a vapor phase product which is treated in a third process, in a solvent column that initially separates isocyanate from solvent and residual phosgene. The reaction residue remaining after the second separation process is then treated in a solvent column in a fourth process to recover the desired isocyanate.

It is not, however, known in the "admitted" prior art that a crude distillation feed to be treated in a divided wall column should not contain more than 2% phosgene. Nor is it taught in that prior art that prior to treatment in a divided wall column, any crude distillation feed containing more than 2% phosgene must be pre-treated to remove the excess phosgene before that distillation feed is introduced into the divided wall column.

The statement made at page 7, lines 7-8 in the Office Action that: The percentages by weights e.g., "The less than 2% by weight" in Claims 1- 2, the concentration in Claims 4-6." is not understood.

If the above-quoted statement was intended to be an argument that Applicants' requirement that the toluene diisocyanate mixture being separated in the dividing wall column have less than 2% by weight phosgene would have been within the ordinary skill of the art, Applicants respectfully request that some authority to support this argument be cited.

A rejection under 35 U.S.C. §103 must have a factual basis. No factual basis to establish that a 2% by weight phosgene limitation would have been obvious to one of ordinary skill in the art at the time Applicants made their invention has been cited.

Kaibel et al (U.S. 6,846,389) discloses a method for the distillative separation of mixtures containing tetrahydrofuran, γ -butyrolactone and/or 1,4-butanediol. One type of apparatus taught to be suitable for use in the practice of this method is a dividing wall column.

Kaibel et al does not teach or suggest a method for separating a crude distillation feed containing materials such as phosgene, toluene diamine, toluene diisocyanate and solvent. The teachings of Kaibel et al can not therefore be construed in any manner which would teach one skilled in the art that the crude distillation feed being treated in a dividing wall column could not contain more than 2% phosgene.

In short, neither the "admitted" prior art nor Kaibel et al teaches or suggests a process in which a crude toluene diisocyanate distillation feed must contain no more than 2% phosgene before being introduced into a divided wall column for separation, as is required in Applicants' claimed invention. The combined teachings of the "admitted" prior art and Kaibel et al do not therefore render Applicants' claimed invention obvious.

Withdrawal of this rejection is therefore requested.

Wright discloses a fractional distillation apparatus which is taught to be useful for separating the components of composite fluid.

Wright does not even mention phosgene much less suggest that a toluene diisocyanate crude distillation feed must contain less than 2% by weight phosgene if that mixture is to be treated in the disclosed apparatus.

Combination of the teachings of the "admitted" prior art with those of Wright would not therefore lead one skilled in the art the requirement of Applicants' claimed invention which requires that a toluene diisocyanate crude distillation feed must contain less than 2% by weight of phosgene prior to being introduced into a dividing wall distillation column for separation.

Applicants' claimed invention is not therefore rendered obvious by the combined teachings of the "admitted" prior art and Wright.

Withdrawal of this rejection is therefore requested.

Hetzell et al discloses a process for the separation of residues of toluene diisocyanate in which an evaporator equipped with a helical agitator must be employed. This process is said to result in "practically complete separation of the residues of toluenediisocyanate production". (at col. 3, lines 23-25)

Hetzel et al requires a specific type of evaporator developed well after the dividing wall columns disclosed in Kaibel et al and Wright. It is therefore readily apparent that Hetzel et al did not expect such dividing wall columns to be suitable for achieving the desired degree of separation of the toluene diisocyanate mixtures disclosed therein.

One skilled in the art reading the Hetzel et al reference would not therefore consider it obvious to combine the teachings of that reference with those of Kaibel et al or Wright.

However, even if one skilled in the art were to combine the teachings of Hetzel et al with either Kaibel et al or Wright, that skilled artisan would not be taught by those references that the crude toluene diisocyanate distillation feed must contain less than 2% by weight phosgene before being subjected to separation in the dividing wall column. Nor would that skilled artisan have any reason to expect that such limitation with respect to phosgene content would make it possible to isolate the high purity product **even though** an evaporator equipped with a helical agitator was not used.

The combined teachings of Hetzel et al and Kaibel et al or Wright do not therefore render Applicants' claimed invention obvious.

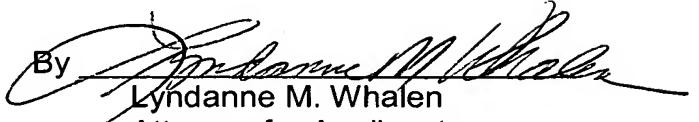
Withdrawal of this rejection is therefore requested.

The Denton et al (U.S. 3,287,387), Schnabel (U.S. 3,987,075) and Ewald (U.S. 3,321,283) disclosures which were made of record but appropriately not applied have been noted.

Applicants are unable to find the Sauer et al and Rust et al disclosures which were made of record but not applied in the record. Applicants therefore respectfully request that the patent number or a citation for these disclosures be provided.

In view of the above amendments and remarks, reconsideration and allowance of Claims 1-10 are respectfully requested.

Respectfully submitted,

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